United States
Environmental Protection
Agency

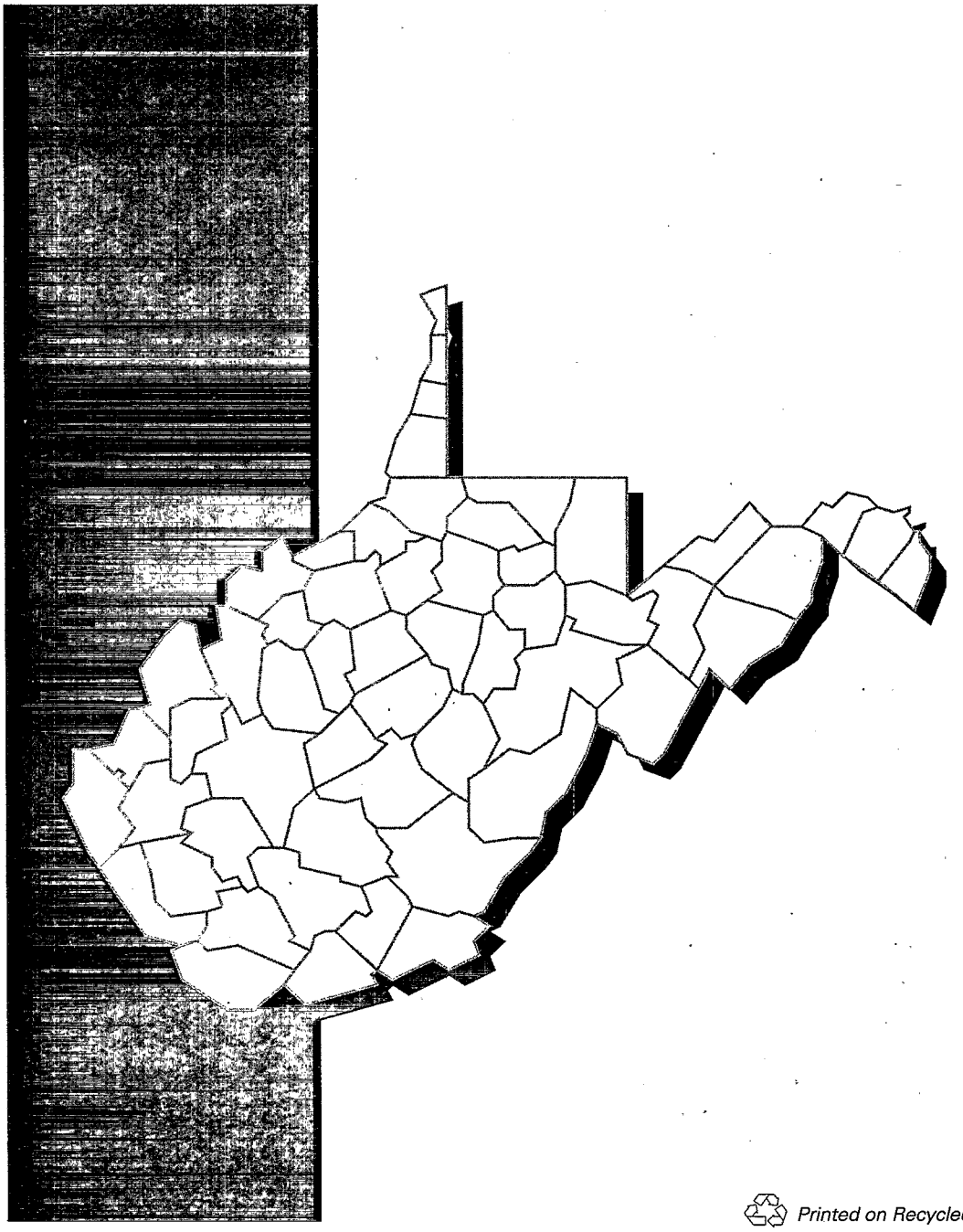
Solid Waste And
Emergency Response
(OS-240)

EPA/540/4-90/048
September 1990

EPA

National Priorities List Sites:

WEST VIRGINIA



EPA/540/4-90/048
September 1990

NATIONAL PRIORITIES LIST SITES:
West Virginia

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Office of Emergency & Remedial Response
Office of Program Management
Washington, D.C. 20460

If you wish to purchase copies of any additional State volumes or the National Overview volume, ***Superfund: Focusing on the Nation at Large***, contact:

National Technical Information Service (NTIS)
U.S. Department of Commerce
5285 Port Royal Road
Springfield, VA 22161
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INTRODUCTION:

A BRIEF OVERVIEW

WHY THE SUPERFUND PROGRAM?

As the 1970s came to a close, a series of headline stories gave Americans a look at the dangers of dumping industrial and urban wastes on the land. First there was New York 's Love Canal. Hazardous waste buried there over a 25-year period contaminated streams and soil, and endangered the health of nearby residents. The result: evacuation of several hundred people. Then the leaking barrels at the Valley of the Drums in Kentucky attracted public attention, as did the dioxin tainted land and water in Times Beach, Missouri.

In all these cases, human health and the environment were threatened, lives were disrupted, property values depreciated. It became increasingly clear that there were large numbers of serious hazardous waste problems that were falling through the cracks of existing environmental laws. The magnitude of these emerging problems moved Congress to enact the Comprehensive Environmental Response, Compensation, and Liability Act in 1980. CERCLA — commonly known as the Superfund — was the first Federal law established to deal with the dangers posed by the Nation's hazardous waste sites.

After Discovery, the Problem Intensified

Few realized the size of the problem until EPA began the process of site discovery and site evaluation. Not hundreds, but thousands of potential hazardous waste sites existed, and they presented the Nation with some of the most complex pollution problems it had ever faced.

In the 10 years since the Superfund program began, hazardous waste has surfaced as a major environmental concern in every part of the United States. It wasn't just the land that was contaminated by past disposal practices. Chemicals in the soil were spreading into the groundwater (a source of drinking water for many) and into streams, lakes, bays, and wetlands. Toxic vapors contaminated the air at some sites, while at others improperly disposed or stored wastes threatened the health of the surrounding community and the environment.

EPA Identified More than 1,200 Serious Sites

EPA has identified 1,236 hazardous waste sites as the most serious in the Nation. These sites comprise the "National Priorities List": sites targeted for cleanup under the Superfund. But site discoveries continue, and EPA estimates that, while some will be deleted after lengthy cleanups, this list, commonly called the NPL, will continue to grow by approximately 100 sites per year, reaching 2,100 sites by the year 2000.

THE NATIONAL CLEANUP EFFORT IS MUCH MORE THAN THE NPL

From the beginning of the program, Congress recognized that the Federal government could not and should not address all environmental problems stemming from past disposal practices. Therefore, the EPA was directed to set priorities and establish a list of sites to target. Sites on the NPL (1,236) are thus a rela-

tively small subset of a larger inventory of potential hazardous waste sites, but they do comprise the most complex and environmentally compelling cases. EPA has logged more than 32,000 sites on its National hazardous waste inventory, and assesses each site within one year of being logged. In fact, over 90 percent of the sites on the inventory have been assessed. Of the assessed sites, 55 percent have been found to require no further Federal action because they did not pose significant human health or environmental risks. The remaining sites are undergoing further assessment to determine if long-term Federal cleanup activities are appropriate.

EPA IS MAKING PROGRESS ON SITE CLEANUP

The goal of the Superfund program is to tackle immediate dangers first, and then move through the progressive steps necessary to eliminate any long-term risks to public health and the environment.

The Superfund responds immediately to sites posing imminent threats to human health and the environment at both NPL sites and sites not on the NPL. The purpose is to stabilize, prevent, or temper the effects of a hazardous release, or the threat of one. These might include tire fires or transportation accidents involving the spill of hazardous chemicals. Because they reduce the threat a site poses to human health and the environment, immediate cleanup actions are an integral part of the Superfund program.

Immediate response to imminent threats is one of the Superfund 's most noted achievements. Where imminent threats to the public or environment were evident, EPA has completed or monitored emergency actions that attacked the most serious threats to toxic exposure in more than 1,800 cases.

The ultimate goal for a hazardous waste site on the NPL is a permanent solution to an environmental problem that presents a serious (but not an imminent) threat to the public or environment. This often requires a long-term effort. In the last four years, EPA has aggressively accelerated its efforts to perform these long-term cleanups of NPL sites. More cleanups were started in 1987, when the Superfund law was amended, than in any previous year. And in 1989 more sites than ever reached the construction stage of the Superfund cleanup process. Indeed construction starts increased by over 200 percent between late 1986 and 1989! Of the sites currently on the NPL, more than 500 — nearly half — have had construction cleanup activity. In addition, over 500 more sites are presently in the investigation stage to determine the extent of site contamination, and to identify appropriate cleanup remedies. Many other sites with cleanup remedies selected are poised for the start of cleanup construction activity. Measuring success by "progress through the cleanup pipeline," EPA is clearly gaining momentum.

EPA MAKES SURE CLEANUP WORKS

EPA has gained enough experience in cleanup construction to understand that environmental protection does not end when the remedy is in place. Many complex technologies — like those designed to clean up groundwater — must operate for many years in order to accomplish their objectives.

EPA 's hazardous waste site managers are committed to proper operation and maintenance of every remedy constructed. No matter who has been delegated responsibility for monitoring the cleanup work, the EPA will assure that the remedy is carefully followed and that it continues to do its job.

Likewise, EPA does not abandon a site even after the cleanup work is done. Every

five years the Agency reviews each site where residues from hazardous waste cleanup still remain to ensure that public and environmental health are still being safeguarded. EPA will correct any deficiencies discovered and report to the public annually on all five-year reviews conducted that year.

CITIZENS HELP SHAPE DECISIONS

Superfund activities also depend upon local citizen participation. EPA's job is to analyze the hazards and deploy the experts, but the Agency needs citizen input as it makes choices for affected communities.

Because the people in a community with a Superfund site will be those most directly affected by hazardous waste problems and cleanup processes, EPA encourages citizens to get involved in cleanup decisions. Public involvement and comment does influence EPA cleanup plans by providing valuable information about site conditions, community concerns and preferences.

This State volume and the companion National Overview volume provide general Superfund background information and descriptions of activities at each State NPL site. These volumes are intended to clearly describe what the problems are, what EPA and others participating in site cleanups are doing, and how we as a Nation can move ahead in solving these serious problems.

USING THE STATE AND NATIONAL VOLUMES IN TANDEM

To understand the big picture on hazardous waste cleanup, citizens need to hear about both environmental progress across the country and the cleanup accomplishments closer to home. The public should understand the challenges involved in hazardous waste cleanup and the decisions we must make — as a Nation — in finding the best solutions.

The National Overview volume — ***Superfund: Focusing on the Nation at Large*** — accompanies this State volume. The National Overview contains important information to help you understand the magnitude and challenges facing the Superfund program as well as an overview of the National cleanup effort. The sections describe the nature of the hazardous waste problem nationwide, threats and contaminants at NPL sites and their potential effects on human health and the environment, the Superfund program's successes in cleaning up the Nation's serious hazardous waste sites, and the vital roles of the various participants in the cleanup process.

This State volume compiles site summary fact sheets on each State site being cleaned up under the Superfund program. These sites represent the most serious hazardous waste problems in the Nation, and require the most complicated and costly site solutions yet encountered. Each State book gives a "snapshot" of the conditions and cleanup progress that has been made at each NPL site in the State through the first half of 1990. Conditions change as our cleanup efforts continue, so these site summaries will be updated periodically to include new information on progress being made.

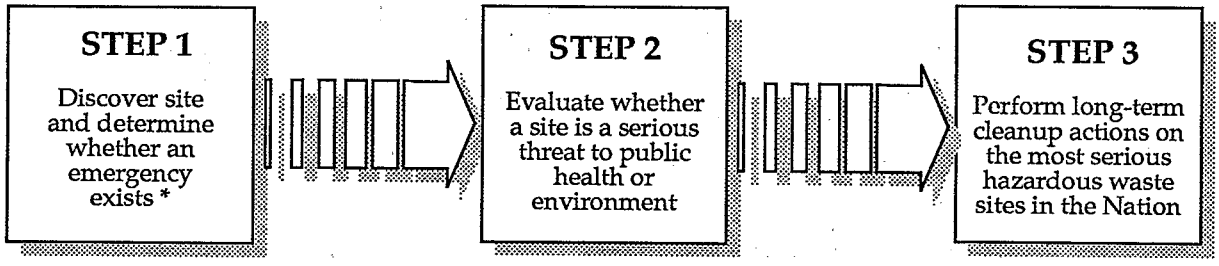
To help you understand the cleanup accomplishments made at these sites, this State volume includes a description of the process for site discovery, threat evaluation and long-term cleanup of Superfund sites. This description — ***How Does the Program Work to Clean Up Sites?*** — will serve as a good reference point from which to review the cleanup status at specific sites. A glossary also is included at the back of the book that defines key terms used in the site fact sheets as they apply to hazardous waste management.

SUPERFUND:

How Does the Program Work to Clean Up Sites?

The diverse problems posed by the Nation's hazardous waste sites have provided EPA with the challenge to establish a consistent approach for evaluating and cleaning up the Nation's most serious sites. To do this, EPA had to step beyond its traditional role as a regulatory agency to develop processes and guidelines for each step in these technically complex site cleanups. EPA has established procedures to coordinate the efforts of its Washington, D.C. Headquarters program offices and its front-line staff in 10 Regional Offices with the State governments, contractors, and private parties who are participating in site cleanup. An important part of the process is that any time during cleanup, work can be led by EPA or the State or, under their monitoring, by private parties who are potentially responsible for site contamination.

The process for discovery of the site, evaluation of threat, and long-term cleanup of Superfund sites is summarized in the following pages. The phases of each of these steps are highlighted within the description. The flow diagram below provides a summary of this three step process.



** Emergency actions are performed whenever needed in this three-step process*

FIGURE 1

Although this State book provides a current "snapshot" of site progress made only by emergency actions and long-term cleanup actions at Superfund sites, it is important to understand the discovery and evaluation process that leads up to identifying and cleaning up these most serious uncontrolled or abandoned hazardous waste sites in the Nation. This discovery and evaluation process is the starting point for this summary description.

STEP 1: SITE DISCOVERY AND EMERGENCY EVALUATION

How does EPA learn about potential hazardous waste sites?

Site discovery occurs in a number of ways. Information comes from concerned citizens — people may notice an odd taste or foul odor in their drinking water, or see half-buried leaking barrels; a hunter may come across a field where waste was dumped illegally. Or there may be an explosion or fire which alerts the State or local authorities to a problem. Routine investigations by State and local governments, and required reporting and inspection of facilities that generate, treat, store, or dispose of hazardous waste also help keep EPA informed about either actual or potential threats of hazardous substance releases. All reported sites or spills are recorded in the Superfund inventory (CERCLIS) for further investigation to determine whether they will require cleanup.

What happens if there is an imminent danger?

As soon as a potential hazardous waste site is reported, EPA determines whether there is an emergency requiring an immediate cleanup action. If there is, they act as quickly as possible to remove or stabilize the imminent threat. These short-term **emergency actions** range from building a fence around the contaminated area to keep people away or temporarily relocating residents until the danger is addressed, to providing bottled water to residents while their local drinking water supply is being cleaned up, or physically removing wastes for safe disposal.

However, emergency actions can happen at any time an imminent threat or emergency warrants them — for example, if leaking barrels are found when cleanup crews start digging in the ground or if samples of contaminated soils or air show that there may be a threat of fire or explosion, an immediate action is taken.

STEP 2: SITE THREAT EVALUATION

If there isn't an imminent danger, how does EPA determine what, if any, cleanup actions should be taken?

Even after any imminent dangers are taken care of, in most cases contamination may remain at the site. For example, residents may have been supplied with bottled water to take care of their immediate problem of contaminated well water. But now it's time to figure out what is contaminating the drinking water supply and the best way to clean it up. Or

EPA may determine that there is no imminent danger from a site, so now any long-term threats need to be evaluated. In either case, a more comprehensive investigation is needed to determine if a site poses a serious but not imminent danger, and requires a long-term cleanup action.

Once a site is discovered and any needed emergency actions are taken, EPA or the State collects all available background information not only from their own files, but also from local records and U.S. Geological Survey maps. This information is used to identify the site and to perform a **preliminary assessment** of its potential hazards. This is a quick review of readily available information to answer the questions:

- Are hazardous substances likely to be present?
- How are they contained?
- How might contaminants spread?
- How close is the nearest well, home, or natural resource area like a wetland or animal sanctuary?
- What may be harmed — the land, water, air, people, plants, or animals?

Some sites do not require further action because the preliminary assessment shows that they don't threaten public health or the environment. But even in these cases, the sites remain listed in the Superfund inventory for record keeping purposes and future reference. Currently, there are more than 32,000 sites maintained in this inventory.

If the preliminary assessment shows that a serious threat *may* exist, what's the next step?

Inspectors go to the site to collect additional information to evaluate its hazard potential. During this **site inspection**, they look for evidence of hazardous waste, such as leaking drums and dead or discolored vegetation. They may take some samples of soil, well water, river water, and air. Inspectors analyze the ways hazardous materials could be polluting the environment — such as runoff into nearby streams. They also check to see if people (especially children) have access to the site.

How does EPA use the results of the site inspection?

Information collected during the site inspection is used to identify the sites posing the most serious threats to human health and the environment. This way EPA can meet the

requirement that Congress gave them to use Superfund monies only on the worst hazardous waste sites in the Nation.

To identify the most serious sites, EPA developed the Hazard Ranking System (HRS). The HRS is the scoring system EPA uses to assess the relative threat from a release or a potential release of hazardous substances from a site to surrounding groundwater, surface water, air, and soil. A site score is based on the likelihood a hazardous substance will be released from the site, the toxicity and amount of hazardous substances at the site, and the people and sensitive environments potentially affected by contamination at the site.

Only sites with high enough health and environmental risk scores are proposed to be added to EPA's **National Priorities List (NPL)**. That's why there are 1,236 sites are on the NPL, but there are more than 32,000 sites in the Superfund inventory. Only NPL sites can have a long-term cleanup paid for from the national hazardous waste trust fund — the Superfund. But the Superfund can and does pay for emergency actions performed at any site, whether *or not it's on the NPL.*

How do people find out whether EPA considers a site a national priority for cleanup using Superfund money?

The public can find out whether a site that concerns them is on the NPL by calling their Regional EPA office at the number listed in this book.

The proposed NPL identifies sites that have been evaluated through the scoring process as the most serious problems among uncontrolled or abandoned hazardous waste sites in the U.S. In addition, a site will be added to the NPL if the Agency for Toxic Substances and Disease Registry issues a health advisory recommending that people be moved away from the site. Updated at least once a year, it's only after public comments are considered that these proposed worst sites are officially added to the NPL.

Listing on the NPL does not set the order in which sites will be cleaned up. The order is influenced by the relative priority of the site's health and environmental threats compared to other sites, and such factors as State priorities, engineering capabilities, and available technologies. Many States also have their own list of sites that require cleanup; these often contain sites not on the NPL that are scheduled to be cleaned up with State money. And it should be said again that any emergency action needed at a site can be performed by the Superfund whether or not a site is on the NPL.

STEP 3: LONG-TERM CLEANUP ACTIONS

After a site is added to the NPL, what are the steps to cleanup?

The ultimate goal for a hazardous waste site on the NPL is a permanent, long-term cleanup. Since every site presents a unique set of challenges, there is no single all-purpose solution. So a five-phase "remedial response" process is used to develop consistent and workable solutions to hazardous waste problems across the Nation:

1. Investigate in detail the extent of the site contamination: **remedial investigation,**
2. Study the range of possible cleanup remedies: **feasibility study,**
3. Decide which remedy to use: **Record of Decision or ROD,**
4. Plan the remedy: **remedial design,** and
5. Carry out the remedy: **remedial action.**

This remedial response process is a long-term effort to provide a permanent solution to an environmental problem that presents a serious, but not an imminent threat to the public or environment.

The first two phases of a long-term cleanup are a combined **remedial investigation and feasibility study** (RI/FS) that determine the nature and extent of contamination at the site, and identify and evaluate cleanup alternatives. These studies may be conducted by EPA or the State or, under their monitoring, by private parties.

Like the initial site inspection described earlier, a remedial investigation involves an examination of site data in order to better define the problem. But the remedial investigation is much more detailed and comprehensive than the initial site inspection.

A remedial investigation can best be described as a carefully designed field study. It includes extensive sampling and laboratory analyses to generate more precise data on the types and quantities of wastes present at the site, the type of soil and water drainage patterns, and specific human health and environmental risks. The result is information that allows EPA to select the cleanup strategy that is best suited to a particular site or to determine that no cleanup is needed.

Placing a site on the NPL does not necessarily mean that cleanup is needed. It is possible for a site to receive an HRS score high enough to be added to the NPL, but not ultimately require cleanup actions. Keep in mind that the purpose of the scoring process is to provide a preliminary and conservative assessment of *potential* risk. During subsequent site investigations, the EPA may find either that there is no real threat or that the site does not pose significant human health or environmental risks.

How are cleanup alternatives identified and evaluated?

EPA or the State or, under their monitoring, private parties identify and analyze specific site cleanup needs based on the extensive information collected during the remedial investigation. This analysis of cleanup alternatives is called a **feasibility study.**

Since cleanup actions must be tailored exactly to the needs of each individual site, more than one possible cleanup alternative is always considered. After making sure that all potential cleanup remedies fully protect human health and the environment and comply with Federal and State laws, the advantages and disadvantages of each cleanup alternative are carefully compared. These comparisons are made to determine their effectiveness in the short- and long-term, their use of permanent treatment solutions, and their technical feasibility and cost.

To the maximum extent practicable, the remedy must be a permanent solution and use treatment technologies to destroy principal site contaminants. But remedies such as containing the waste on site or removing the source of the problem (like leaking barrels) are often considered effective. Often special pilot studies are conducted to determine the effectiveness and feasibility of using a particular technology to clean up a site. Therefore, the combined remedial investigation and feasibility study can take between 10 and 30 months to complete, depending on the size and complexity of the problem.

Does the public have a say in the final cleanup decision?

Yes. The Superfund law requires that the public be given the opportunity to comment on the proposed cleanup plan. Their concerns are carefully considered before a final decision is made.

The results of the remedial investigation and feasibility study, which also point out the recommended cleanup choice, are published in a report for public review and comment. EPA or the State encourages the public to review the information and take an active role in the final cleanup decision. Fact sheets and announcements in local papers let the community know where they can get copies of the study and other reference documents concerning the site.

The public has a minimum of 30 days to comment on the proposed cleanup plan after it is published. These comments can either be written or given verbally at public meetings that EPA or the State are required to hold. Neither EPA nor the State can select the final cleanup remedy without evaluating and providing written answers to specific community comments and concerns. This "responsiveness summary" is part of EPA's write-up of the final remedy decision, called the Record of Decision or ROD.

The ROD is a public document that explains the cleanup remedy chosen and the reason it was selected. Since sites frequently are large and must be cleaned up in stages, a ROD may be necessary for each contaminated resource or area of the site. This may be necessary when contaminants have spread into the soil, water and air, and affect such sensitive areas as wetlands, or when the site is large and cleaned up in stages. This often means that a number of remedies using different cleanup technologies are needed to clean up a single site.

If every cleanup action needs to be tailored to a site, does the design of the remedy need to be tailored too?

Yes. Before a specific cleanup action is carried out, it must be designed in detail to meet specific site needs. This stage of the cleanup is called the **remedial design**. The design phase provides the details on how the selected remedy will be engineered and constructed.

Projects to clean up a hazardous waste site may appear to be like any other major construction project but, in fact, the likely presence of combinations of dangerous chemicals demands special construction planning and procedures. Therefore, the design of the remedy can take anywhere from 6 months to 2 years to complete. This blueprint for site cleanup includes not only the details on every aspect of the construction work, but a description of the types of hazardous wastes expected at the

site, special plans for environmental protection, worker safety, regulatory compliance, and equipment decontamination.

Once the design is complete, how long does it take to actually clean up the site and how much does it cost?

The time and cost for performing the site cleanup — called the **remedial action** — are as varied as the remedies themselves. In a few cases, the only action needed may be to remove drums of hazardous waste and decontaminate them — an action that takes limited time and money. In most cases, however, a remedial action may involve different and expensive measures that can take a long time.

For example, cleaning polluted groundwater or dredging contaminated river bottoms can take several years of complex engineering work before contamination is reduced to safe levels. Sometimes the selected cleanup remedy described in the ROD may need to be modified because of new contaminant information discovered or difficulties that were faced during the early cleanup activities. Taking into account these differences, a remedial cleanup action takes an average of 18 months to complete and costs an average of $26 million per site.

Once the cleanup action is complete, is the site automatically "deleted" from the NPL?

No. The deletion of a site from the NPL is anything but automatic. For example, cleanup of contaminated groundwater may take up to 20 years or longer. Also, in some cases the **long-term monitoring** of the remedy is required to ensure that it is effective. After construction of certain remedies, operation and maintenance (e.g., maintenance of ground cover, groundwater monitoring, etc.) or continued pumping and treating of groundwater, may be required to ensure that the remedy continues to prevent future health hazards or environmental damage, and ultimately meets the cleanup goals specified in the ROD. Sites in this final monitoring or operational stage of the cleanup process are designated as "construction completed".

It's not until a site cleanup meets all the goals and monitoring requirements of the selected remedy that EPA can officially propose the site for "**deletion**" from the NPL. And it's not until public comments are taken into consideration that a site can actually be deleted from the NPL. Deletions that have occurred are included in the "Construction Complete" category in the progress report found later in this book.

Can EPA make parties responsible for the contamination pay?

Yes. Based on the belief that "the polluters should pay," after a site is placed on the NPL, the EPA makes a thorough effort to identify and find those responsible for causing contamination problems at a site. Although EPA is willing to negotiate with these private parties and encourages voluntary cleanup, it has the authority under the Superfund law to legally force those potentially responsible for site hazards to take specific cleanup actions. All work performed by these parties is closely guided and monitored by EPA, and must meet the same standards required for actions financed through the Superfund.

Because these enforcement actions can be lengthy, EPA may decide to use Superfund monies to make sure a site is cleaned up without unnecessary delay. For example, if a site presents an imminent threat to public health and the environment, or if conditions at a site may worsen, it could be necessary to start the cleanup right away. Those responsible for causing site contamination are liable under the law for repaying the money EPA spends in cleaning up the site.

Whenever possible, EPA and the Department of Justice use their legal enforcement authorities to require responsible parties to pay for site cleanups, thereby preserving the Superfund for emergency actions and sites where no responsible parties can be identified.

HOW TO:

USING THE STATE VOLUME

The Site Fact Sheets presented in this book are comprehensive summaries that cover a broad range of information. The fact sheets describe hazardous waste sites on the National Priorities List (NPL) and their locations, as well as the conditions leading to their listing ("Site Description"). They list the types of contaminants that have been discovered and related threats to public and ecological health ("Threats and Contaminants"). "Cleanup Approach" presents an overview of the cleanup activities completed, underway, or planned. The fact sheets conclude with a brief synopsis of how much progress has been made on protecting public health and the environment. The summaries also pinpoint other actions, such as legal efforts to involve polluters responsible for site contamination and community concerns.

The following two pages show a generic fact sheet and briefly describes the information under each section. The square "icons" or symbols accompanying the text allow the reader to see at a glance which environmental resources are affected and the status of cleanup activities.

Icons in the *Threats and Contaminants* Section

Contaminated **Groundwater** resources in the vicinity or underlying the site. (Groundwater is often used as a drinking water source.)

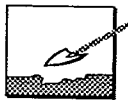
Contaminated **Surface Water and Sediments** on or near the site. (These include lakes, ponds, streams, and rivers.)

Contaminated **Air** in the vicinity of the site. (Pollution is usually periodic and involves contaminated dust particles or hazardous gas emissions.)

Contaminated **Soil and Sludges** on or near the site.

Threatened or contaminated **Environmentally Sensitive Areas** in the vicinity of the site. (Examples include wetlands and coastal areas, critical habitats.)

Icons in the *Response Action Status* Section



Initial Actions have been taken or are underway to eliminate immediate threats at the site.

Site Studies at the site are planned or underway.

Remedy Selected indicates that site investigations have been concluded and EPA has selected a final cleanup remedy for the site or part of the site.

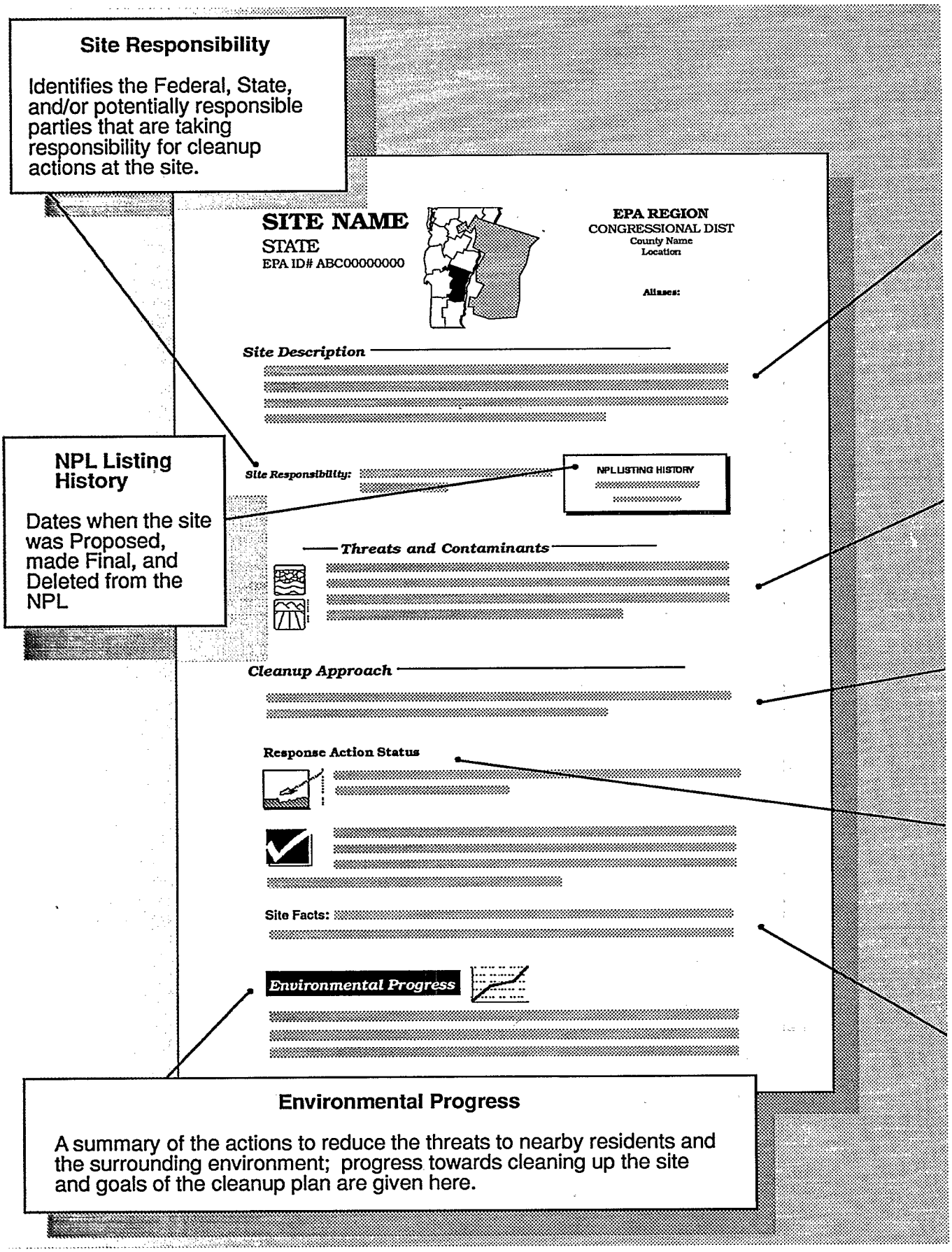
Remedy Design means that engineers are preparing specifications and drawings for the selected cleanup technologies.

Cleanup Ongoing indicates that the selected cleanup remedies for the contaminated site — or part of the site — are currently underway.

Cleanup Complete shows that all cleanup goals have been achieved for the contaminated site or part of the site.

Site Responsibility

Identifies the Federal, State, and/or potentially responsible parties that are taking responsibility for cleanup actions at the site.



NPL Listing History

Dates when the site was Proposed, made Final, and Deleted from the NPL

Environmental Progress

A summary of the actions to reduce the threats to nearby residents and the surrounding environment; progress towards cleaning up the site and goals of the cleanup plan are given here.

WHAT THE FACT SHEETS CONTAIN

Site Description

This section describes the location and history of the site. It includes descriptions of the most recent activities and past actions at the site that have contributed to the contamination. Population estimates, land usages, and nearby resources give readers background on the local setting surrounding the site. Throughout the site description and other sections of the site summary, technical or unfamiliar terms that are *italicized* are presented in the glossary at the end of the book. Please refer to the glossary for more detailed explanation or definition of the terms.

Threats and Contaminants

The major chemical categories of site contamination are noted as well as which environmental resources are affected. Icons representing each of the affected resources (may include air, groundwater, surface water, soil and contamination to environmentally sensitive areas) are included in the margins of this section. Potential threats to residents and the surrounding environments arising from the site contamination are also described. Specific contaminants and contaminant groupings are italicized and explained in more detail in the glossary.

Cleanup Approach

This section contains a brief overview of how the site is being cleaned up.

Response Action Status

Specific actions that have been accomplished or will be undertaken to clean up the site are described here. Cleanup activities at NPL sites are divided into separate phases depending on the complexity and required actions at the site. Two major types of cleanup activities are often described: initial, immediate or emergency actions to quickly remove or reduce imminent threats to the community and surrounding areas; and long-term remedial phases directed at final cleanup at the site. Each stage of the cleanup strategy is presented in this section of the summary. Icons representing the stage of the cleanup process (initial actions, site investigations, EPA selection of the cleanup remedy, engineering design phase, cleanup activities underway and completed cleanup) are located in the margin next to each activity description.

Site Facts

Additional information on activities and events at the site are included in this section. Often details on legal or administrative actions taken by EPA to achieve site cleanup or other facts pertaining to community involvement with the site cleanup process are reported here.

How To

The fact sheets are arranged in alphabetical order by site name. Because site cleanup is a dynamic and gradual process, all site information is accurate as of the date shown on the bottom of each page. Progress is always being made at NPL sites, and EPA will periodically update the Site Fact Sheets to reflect recent actions and publish updated State volumes.

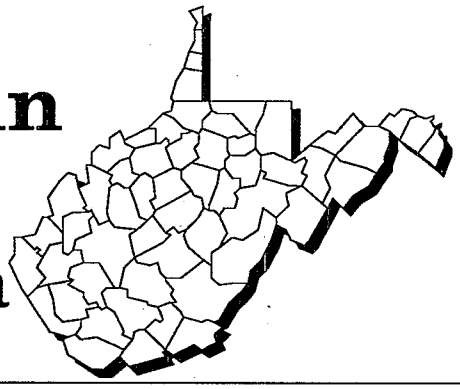
HOW CAN *YOU* USE THIS STATE BOOK?

You can use this book to keep informed about the sites that concern you, particularly ones close to home. EPA is committed to involving the public in the decisionmaking process associated with hazardous waste cleanup. The Agency solicits input from area residents in communities affected by Superfund sites. Citizens are likely to be affected not only by hazardous site conditions, but also by the remedies that combat them. Site cleanups take many forms and can affect communities in different ways. Local traffic may be rerouted, residents may be relocated, temporary water supplies may be necessary.

Definitive information on a site can help citizens sift through alternatives and make decisions. To make good choices, you must know what the threats are and how EPA intends to clean up the site. You must understand the cleanup alternatives being proposed for site cleanup and how residents may be affected by each one. You also need to have some idea of how your community intends to use the site in the future and to know what the community can realistically expect once the cleanup is complete.

EPA wants to develop cleanup methods that meet community needs, but the Agency can only take local concerns into account if it understands what they are. Information must travel both ways in order for cleanups to be effective and satisfactory. Please take this opportunity to learn more, become involved, and assure that hazardous waste cleanup at "your" site considers your community's concerns.

NPL Sites in State of West Virginia



West Virginia is bordered by Pennsylvania and Maryland to the north, Virginia, Kentucky, and Ohio to the west, and Virginia to the south and east. The State covers 24,232 square miles and consists of mountainous and hilly terrain. The Allegheny Plateau covers the western two-thirds of the state. West Virginia experienced a 3.8 percent decrease in population during the 1980s and currently has approximately 1,876,000 residents, ranking 34th in U.S. populations. Principal State industries are mining, mineral and chemical production, primary metals, and stone, clay, glass products, timber, and tourism. West Virginia manufactures plastic and hardwood products, basic organic and inorganic chemicals, aluminum, steel, fabricated metal products, and machinery.

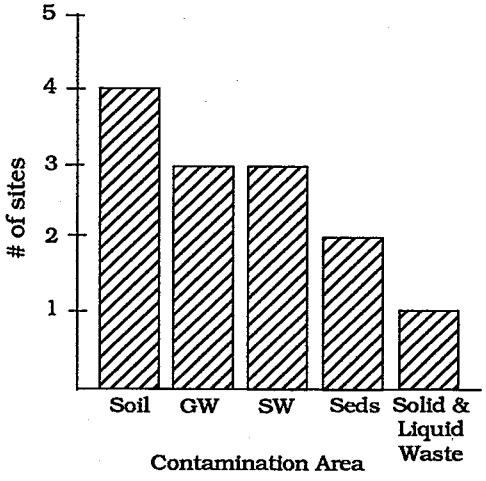
How Many West Virginia Sites Are on the NPL?

Proposed	0
Final	5
Deleted	0
	5

Where Are the NPL Sites Located?

Cong. District 01	1 sites
Cong. District 02	2 sites
Cong. District 03	2 sites

How are Sites Contaminated and What are the Principal* Chemicals ?



Soil, Solid and Liquid Wastes: Volatile organic compounds (VOCs) and creosotes (organics).

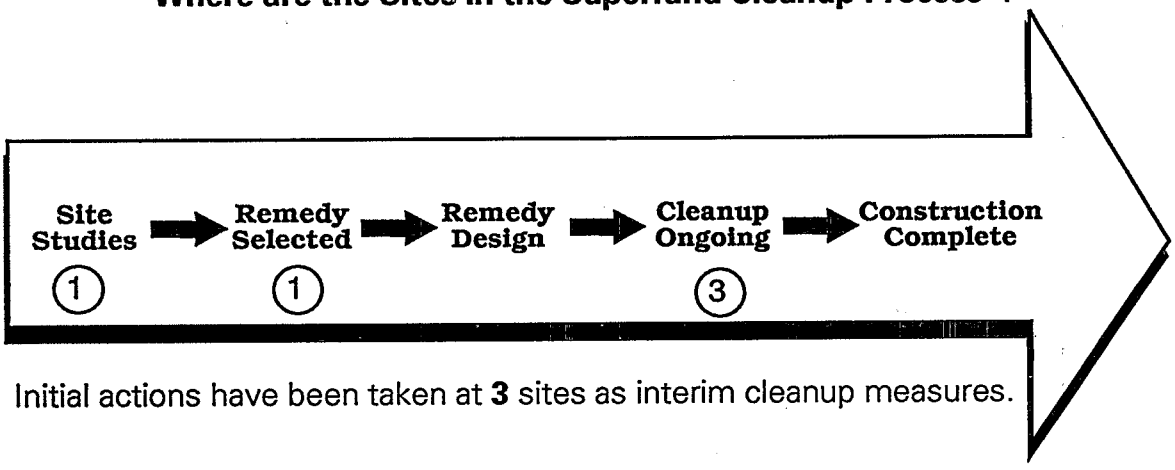
Groundwater: Volatile organic compounds (VOCs), dioxins, heavy metals (inorganics), creosotes (organics), pesiticides, and asbestos.

Surface Water and Sediments: Creosotes (organics), pesiticides, and volatile organic compounds (VOCs).

*Appear at 25% or more sites

continued

Where are the Sites in the Superfund Cleanup Process*?



Initial actions have been taken at **3** sites as interim cleanup measures.

Who Do I Call with Questions?

The following pages describe each NPL site in West Virginia, providing specific information on threats and contaminants, cleanup activities, and environmental progress. Should you have questions, please call one of the offices listed below:

West Virginia Superfund Office	(304) 348-2745
EPA Region III Superfund Office	(215) 597-8132
EPA Public Information Office	(202) 477-7751
EPA Superfund Hotline	(800) 424-9346
EPA Region III Superfund Public Relations Office	(215) 597-9905

*Cleanup status reflects phase of site activities rather than administrative accomplishments.

The NPL Progress Report

The following Progress Report lists the State sites currently on or deleted from the NPL, and briefly summarizes the status of activities for each site at the time this report was prepared. The steps in the Superfund cleanup process are arrayed across the top of the chart, and each site's progress through these steps is represented by an arrow (➨) which indicates the current stage of cleanup at the site.

Large and complex sites are often organized into several cleanup stages. For example, separate cleanup efforts may be required to address the source of the contamination, hazardous substances in the groundwater, and surface water pollution, or to clean up different areas of a large site. In such cases, the chart portrays cleanup progress at the site's *most advanced stage,* reflecting the status of site activities rather than administrative accomplishments.

- ➨ An arrow in the "Initial Response" category indicates that an emergency cleanup or initial action has been completed or is currently underway. Emergency or initial actions are taken as an interim measure to provide immediete relief from exposure to hazardous site conditions or to stabilize a site to prevent further contamination.
- ➨ An arrow in the "Site Studies" category indicates that an investigation to determine the nature and extent of the contamination at the site is currently ongoing or planned to begin in 1991.
- ➨ An arrow in the "Remedy Selection" category means that the EPA has selected the final cleanup strategy for the site. At the few sites where the EPA has determined that initial response actions have eliminated site contamination, or that any remaining contamination will be naturally dispersed without further cleanup activities, a "No Action" remedy is selected. In these cases, the arrows in the Progress Report are discontinued at the "Remedy Selection" step and resume in the final "Construction Complete" category.
- ➨ An arrow at the "Remedial Design" stage indicates that engineers are currently designing the technical specifications for the selected cleanup remedies and technologies.
- ➨ An arrow marking the "Cleanup Ongoing" category means that final cleanup actions have been started at the site and are currently underway.
- ➨ A arrow in the "Construction Complete" category is used *only* when *all phases* of the site cleanup plan have been performed and the EPA has determined that no additional construction actions are required at the site. Some sites in this category may currently be undergoing long-term pumping and treating of groundwater, operation and maintenance or monitoring to ensure that the completed cleanup actions continue to protect human health and the environment.

The sites are listed in alphabetical order. Further information on the activities and progress at each site is given in the site "Fact Sheets" published in this volume.

Progress Toward Cleanup at NPL Sites in the State of West Virginia

Page	Site Name	County	NPL	Date	Initial Response	Site Studies	Remedy Selected	Remedy Design	Cleanup Ongoing	Construction Complete
1	FIKE CHEMICAL	KANAWHA	Final	09/01/83	➡	➡	➡	➡	➡	
3	FOLLANSBEE SITE	BROOKE	Final	09/01/83		➡				
5	LEETOWN PESTICIDE	JEFFERSON	Final	09/01/83	➡	➡	➡	➡	➡	
7	ORDNANCE WORKS DISPOSAL AREAS	MONONGALIA	Final	06/01/86	➡	➡	➡			
9	WEST VIRGINIA ORDNANCE	MASON	Final	09/01/83		➡	➡	➡	➡	

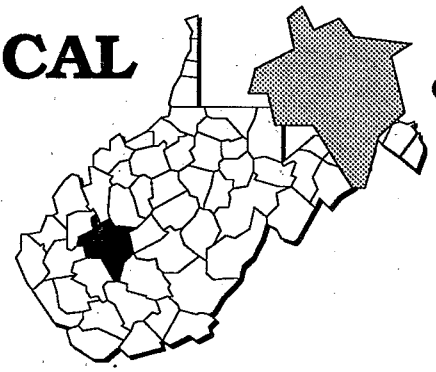
NPL:

Site Fact Sheets

FIKE CHEMICAL

WEST VIRGINIA

EPA ID# WVD047989207



REGION 3

CONGRESSIONAL DIST. 03

Kanawha/Putnam County

Nitro Industrial Complex in Nitro

Aliases:
Fike Chemical/Artel
Artel Site

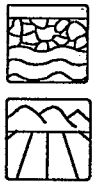
Site Description

The 12-acre Fike Chemical site consists of Fike Chemicals, Inc. (now Artel Chemicals) and the Cooperative Sewage Treatment, Inc. (CST) property, which is a facility designed to treat Fike's stormwater and wastewater. The Fike plant was a small volume batch formulator that specialized in the development of over 60 chemicals, custom chemical processing, and specialty chemicals. The plant was purchased by Artel Chemical in 1986 and was subsequently abandoned in 1988. Site activities leading to contamination include improper storage of drums containing hazardous substances, on-site disposal of hazardous wastes through drum burial and unlined surface *lagoons*, and tank storage of various chemical stock, products, and wastes. Treated water from the CST property is discharged into the Kanawha River. Approximately 8,000 people live within a 1-mile radius of the site, and an estimated 25,000 people live within a 10-mile radius of the industrial complex.

Site Responsibility: This site is being addressed through Federal and *potentially responsible parties'* actions.

NPL LISTING HISTORY
Proposed Date: 12/01/82
Final Date: 09/01/83

Threats and Contaminants

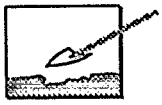


The groundwater and soil are contaminated with various *volatile organic compounds* (VOCs) and dioxins from the chemical plant's process wastes. There is a potential for release of volatile chemicals into the air posing risks if inhaled by people. Potential human health threats exist if contaminated groundwater or soil is accidentally ingested. The Kanawha River, located 2,000 feet east of the site, is threatened by contaminated *runoff* from the plant.

Cleanup Approach

This site is being addressed in five stages: immediate actions and four *long-term remedial phases* focusing on: (1) removal activities; (2) process plant equipment and chemicals; (3) soil, groundwater, and buried containers; and (4) the wastewater treatment facility.

Response Action Status



Immediate Actions: In 1988, the parties potentially responsible for the site contamination began to remove drums, tanks, and cylinders which were on the surface of the soil. All of the chemicals and sources of contamination were removed by 1990. These actions conducted by the EPA and the potentially responsible parties have eliminated the immediate threat to the public and have prevented further contamination from waste sources.

Removal Activities: Additonal removal activities are currently under way and are expected to be completed in 1990. These activities include: removal, off-site incineration and disposal of a tank containing 9,000 gallons of contaminants; removal of drums and other containers to an EPA-approved disposal facility; *stabilization* of lagoons; discharge of treated liquids to the Kanawha River; and removal and disposal of cyanides.

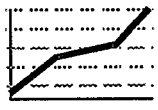
Process Plant Equipment and Chemicals: A study addressing process plant equipment and associated chemicals is planned to be completed in 1990. The EPA's final decision in selecting the remedy for the plant is also expected to be completed in 1990.

Soil, Groundwater, and Buried Containers: A study to determine the extent and nature of contamination and to identify alternatives for cleanup addressing contaminated soils, groundwater, and buried containers is under way. The study is expected to be completed by 1991.

Wastewater Treatment Facility: A study to determine the nature and extent of contamination and to identify alternatives for cleanup addressing the on-site wastewater treatment facility is under way. The facility will be dismantled once all contamination at the site has been addressed.

Site Facts: In November 1982, a *Consent Decree* was signed between the EPA and Fike Chemicals.

Environmental Progress

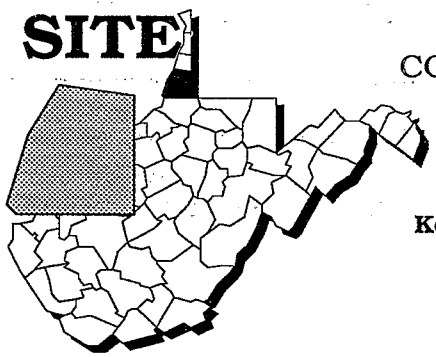


By removing surface drums, tanks, and contaminant sources, the EPA and the potentially responsible parties at the Fike Chemical site have eliminated immediate threats to the surroundings while further studies and cleanup activities are undertaken.

FOLLANSBEE SITE

WEST VIRGINIA

EPA ID# WVD004336749



REGION 3

CONGRESSIONAL DIST. 01

Brooke County

1/4 mile from Follansbee

Aliases:
Koppers Disposal Site Coketown
Koppers Chemical Co.
Koppers Industries, Inc.
Wheeling Pittsburgh Steel

Site Description

The Follansbee site covers 26 1/2 acres on the Ohio River in Follansbee. The site is an operating coal tar processing plant owned by Koppers Industries, Inc. and consists of process and storage facilities for the manufacture of coal tar by-products. The site was acquired from American Tar Products, the operators the facility from 1914 to 1926. In 1929, a tar pitch plant was built, and in the 1930s, a caustic plant was installed. A pencil pitch plant was built in 1962 to convert liquid pencil pitch to solid pitch. There also is a wastewater treatment plant on site. Contamination of the site is potentially due to leaking tanks, spills, surface *impoundments*, and poor operation cleanup practices. Numerous springs and *seeps* are in the area. There are an estimated 5,875 people living within a 3-mile radius of the site. Fifty private residential water supply wells are within the 3-mile radius, and there are public wells located 5 miles downstream of the site that may be impacted by this site, although limited data exists. The site is underlain by three *aquifers*, two of which are contaminated.

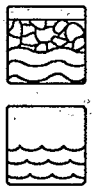
Site Responsibility: This site is being addressed through Federal and *potentially responsible parties'* actions.

NPL LISTING HISTORY

Proposed Date: 12/01/82

Final Date: 09/01/83

Threats and Contaminants



Two of the three aquifers are contaminated with *polycyclic aromatic hydrocarbons* (PAHs), *volatile organic compounds* (VOCs) such as benzene and toluene, and metals. Surface water springs and riverbank seeps are contaminated with *phenols*. There is limited data on the potential health threats caused by this site. Potential health risks may exist from drinking or coming in direct contact with contaminated groundwater and surface water. The Ohio River may be potentially threatening those who use it for recreational purposes or as a source for domestic water supplies. However, the impact of the site on the Ohio River still needs to be assessed.

Cleanup Approach

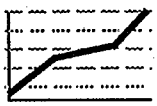
The site is being addressed in a single *long-term remedial phase* directed at cleanup of the entire site.

Response Action Status

Entire Site: The EPA conducted a field investigation at the site in 1982, resulting in its inclusion on the NPL. In 1983, Koppers installed a trench to intercept contaminated groundwater. The groundwater is pumped to the company's wastewater treatment facility. The company installed a second pump in an attempt to prevent the contaminated groundwater from reaching the Ohio River, as well as to control the groundwater flow. Based on the results from the *alluvial* aquifer study conducted by Koppers, the EPA and Koppers agreed that an evaluation of the site is needed to determine the extent of the contamination at the site and to identify alternative technologies for cleanup. Koppers has submitted a revised plan for the schedule and objectives of the study to the EPA. The investigation is scheduled to begin in 1990.

Site Facts: A *Consent Decree* was signed in August 1984, between the EPA, Koppers, and Wheeling-Pittsburgh Steel, with the State of West Virginia as intervenor. The Consent Decree called for: (a) paving of Kopper's property; (b) installation of five recovery wells on Kopper's property to eliminate seepage from Koppers to the Wheeling-Pittsburgh Steel coal pits and to prevent future groundwater contamination; and (c) Koppers to conduct an alluvial aquifer study.

Environmental Progress

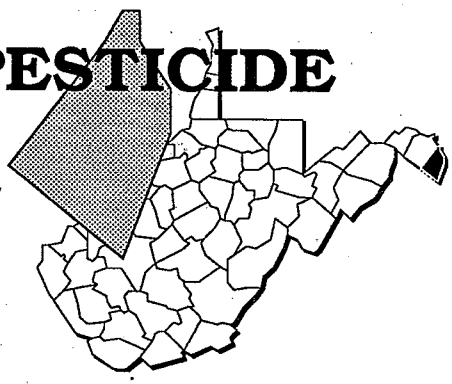


Various measures have been taken to eliminate the spread of contamination in the groundwater and to the Ohio River. The EPA has evaluated the site and determined that conditions at the site do not pose an immediate threat while the investigations leading to the selection of a final cleanup remedy are taking place.

LEETOWN PESTICIDE

WEST VIRGINIA

EPA ID# WVD980693402



REGION 3

CONGRESSIONAL DIST. 02

Jefferson County

8 miles south of Martinsburg

Alias:
Robinson Property

Site Description

Leetown Pesticide is a 1-acre site that contains 3 specific areas that have been contaminated by the agricultural use of pesticides, pesticide disposal, and *landfilling*. These three areas are the former Pesticide Pile Area, the former Jefferson Orchard Mixing Area, and the former Crimm Orchard Packing Shed. The former pesticide pile area allegedly resulted from the disposal of pesticide-contaminated debris from a 1975 chemical plant fire. Debris from the fire had been *landfarmed* in a pasture as donated "soil conditioners" to local farms. The pasture currently is being used for grazing horses. The Jefferson Orchard mixing area was used to prepare pesticides during active operation of the orchard. The orchard was abandoned during the late 1950s or early 1960s. The land currently is being used for the production of silage corn. When the Crimm Orchard was in operation, the packing shed was used to process the fruit crop and to mix pesticides. Portions of the *watershed* areas for the Bell Spring Run and Blue and Gray Spring Run are on the site. There are a number of private residences in the area that rely on groundwater wells for drinking water. Approximately 140 people live within 1 mile of the site. Land use in the area is predominantly agricultural, dedicated to pasture or forage crop production for dairy cattle operations.

Site Responsibility: This site is being addressed through a combination of Federal, State, and *potentially responsible parties'* actions.

NPL LISTING HISTORY
Proposed Date: 12/01/82
Final Date: 09/01/83

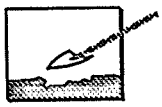
Threats and Contaminants

Sediment from Bell Creek Run and Link Spring Run contains detectable concentrations of the pesticide DDT from former site activities. Soil in the pesticide pile area is contaminated with DDT, arsenic, and lead. The pesticide mixing area and Crimm Orchard Packing Shed soils are also contaminated with DDT, along with endosulfan, another pesticide. Threats to health include accidental ingestion, direct contact, or inhalation of contaminated soil. Farmers who work the land and have frequent, direct contact with soil or who inhale contaminated dust while plowing or tilling the land are at particular risk. People may be exposed to contaminants by eating the area crops or by consuming milk, meat, and other animal products contaminated with pesticides.

Cleanup Approach

The site is being addressed in two stages: immediate actions and a *long-term remedial phase* directed at cleanup of the entire site.

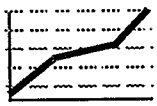
Response Action Status



Immediate Actions: In 1983, under supervision of the EPA and the State, a party potentially responsible for the site contamination removed and disposed of a contaminated pile consisting of 160 cubic yards of waste and soil. In 1988, a packing shed containing broken bags of DDT was dismantled. A soil *cap* was placed over the shed area after contaminants were disposed of in a licensed hazardous waste facility.

Entire Site: The final selection of cleanup technologies to address contamination include: (1) excavation and consolidation of 3,600 cubic yards of contaminated soil from the former Pesticide Pile Area, the former Pesticide Mixing Area, and the former Crimm Packing Shed Area; (2) placement of contaminated soils in a specially constructed treatment bed; (3) removal and off-site disposal of the contaminated flooring, a wooden spray wagon, and drums of pesticide products in a hazardous waste facility; and (4) construction of a monitoring well network, and construction of surface water diversion, sedimentation channels, and diversion dikes. Cleanup activities are currently under way and the EPA continues to monitor the groundwater. Cleanup activities are expected to be completed in 1991.

Environmental Progress

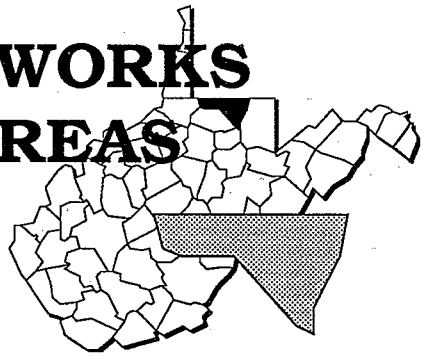


The removal of contaminated materials from the Leetown Pesticide site, and the safe destruction and subsequent capping of a packing shed have greatly reduced the potential for exposure to contaminants at the site while cleanup activities are completed.

ORDNANCE WORKS DISPOSAL AREAS

WEST VIRGINIA

EPA ID# WVD000850404



REGION 3

CONGRESSIONAL DIST. 02

Monongalia County

1 mile southeast of Morgantown

Alias:
Morgantown Ordinance Works

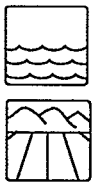
Site Description

The 826-acre Ordnance Works Disposal Areas site is located on the west bank of the Monongahela River. Many private companies have operated chemical manufactories here since 1941, when E.I. Du Pont de Nemours began producing ammonia and methanol for the Department of War. Between 1946 and 1958, Sharon Steel operated a coke plant, Heyden Chemical operated an ammonia production facility, and Olin Mathieson produced various organic chemicals on the site. The site was sold in 1962 to Morgantown Ordnance Works and, in 1982, to Morgantown Industrial Park. Disposal of contaminated materials from the manufacturing process has been noted in several locations including a *landfill*, a scraped area, a former *lagoon* area, three streams traversing the site, and an industrial area in the northern portion of the site. Testing has shown contamination of these spots with heavy metals and *polycyclic aromatic hydrocarbons* (PAHs). The site is in the rural outskirts southwest of Morgantown; the population within a mile is only 100. The Monongahela River supplies drinking water to approximately 60,000 residents, and the water *intake* is less than a mile downstream of the site.

Site Responsibility: This site is being addressed through Federal actions.

NPL LISTING HISTORY
Proposed Date: 10/01/84
Final Date: 06/01/86

Threats and Contaminants



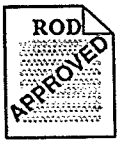
Sediments and soil adjacent to the landfill, scraped area, and former lagoon area are contaminated with heavy metals and PAHs from surface *runoff.* Potential health hazards include accidentally ingesting or touching contaminants.

Cleanup Approach

This site is being addressed in three stages: immediate actions and two *long-term remedial phases* focusing on (1) the landfill, scraped area, and former lagoon sections of the site and (2) the industrial complex areas.

Response Action Status

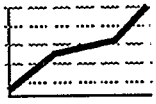
Immediate Actions: In 1984, to alleviate the immediate threat at a portion of the site, the current owner removed drums containing *polychlorinated biphenyls* (PCBs) to a secure storage area within the site. They were later disposed of in an approved facility.



Landfill/Scraped Area/Former Lagoons: In 1989, the EPA selected the following remedies for site cleanup at these areas: (1) consolidating the existing landfill waste and covering it with a multi-layer *cap* to keep rainfall and runoff from spreading contaminants; (2) *bioremediation* of the former lagoons, scraped area soil, and contaminated stream sediments; (3) controlling drainage and sedimentation on the surface in the landfill area; and (4) conducting post-treatment air monitoring to ensure the effectiveness of the cleanup. Engineering design is scheduled to begin in 1990. Final cleanup is scheduled for completion in 1995.

Industrial Complex Areas: The EPA proposes to conduct a study to determine the nature and extent of contamination and to identify alternatives for cleanup at the industrial complex areas in the northern portion of the site. The study is scheduled to begin in 1990.

Environmental Progress

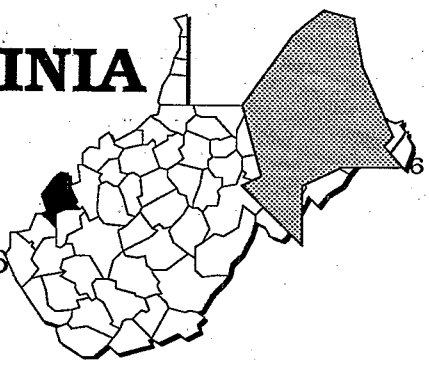


The removal of drums containing PCBs has eliminated immediate threats to the surroundings at Ordnance Works Disposal Areas while the EPA completes intensive studies and begins the final cleanup actions at the site.

WEST VIRGINIA ORDNANCE

WEST VIRGINIA

EPA ID# WVD980713036



REGION 3

CONGRESSIONAL DIST. 03

Mason County

6 miles north of Point Pleasant on the eastern bank of the Ohio River

Aliases:
McClintic Wildlife Refuge Station
West Virginia Ordnance Works

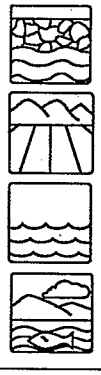
Site Description

From 1942 to 1945, the Army produced TNT (trinitrotoluene) at West Virginia Ordnance, a 8,320-acre site. Soils around the operation's industrial area, process facilities, and industrial wastewater disposal system were contaminated with the TNT explosive and its by-products, and asbestos. When the site was decontaminated and *decommissioned* in 1945, the Army deeded the industrial portion to West Virginia, stipulating that it be used for wildlife management. The State created the McClintic State Wildlife Station on 2,785 acres, and the area is now used for public hunting, fishing, camping, and day recreational use. Other non-industrial portions of the original parcel are now owned by the County or by private citizens. In 1989, redwater *seepage* (liquid waste produced during the TNT manufacturing process) was observed near Pond 13 on the wildlife station. EPA and State investigations revealed that the groundwater and surface water were contaminated with explosive *nitroaromatics.* Buried lines associated with TNT manufacture contained some crystalline TNT. The ground was littered with residues and chunks of nitroaromatic compounds. About 11,000 people visit the McClintic Wildlife Station each year. Surrounding areas include residential communities, the West Virginia University (WVU) Experimental Station, Mason County Airport, National Guard facilities, the county fairgrounds, cropland, pastures, and forests.

Site Responsibility: This site is being addressed through Federal actions.

NPL LISTING HISTORY
Proposed Date: 10/01/81
Final Date: 09/01/83

Threats and Contaminants



Groundwater, *seepage* , soils, and the surface water on site are contaminated with explosive nitroaromatic compounds including TNT, trinitrobenzene, and dinitrotoluene from former site operations. Visitors to the wildlife refuge may be exposed to contaminants by touching or accidentally ingesting contaminated surface water or soils. The shallow groundwater has been shown to be contaminated and is moving toward nearby private residences with wells. No nitroaromatics have been detected in any of the 13 local water supply wells, but sewer lines and open manholes contain reactive wastes, which may pose a safety and chemical hazard to people entering them. The site is a wildlife refuge.

continued

Cleanup Approach

The site is being addressed in two *long-term remedial phases* focusing on source control and groundwater cleanup.

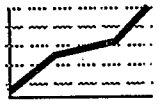
Response Action Status

Source Control: The EPA and the Army decided in 1985 that cleanup work should be conducted in two separate phases: one tackled the sources of contamination, and the other the groundwater pollution. The remedy selected for source control is: (1) in-place flaming of reactive TNT residue on soil surfaces and installation of a 2-foot soil cover over highly contaminated areas, (2) disposal of asbestos off site, and (3) excavation of reactive sewer lines, flashing of explosives, and *backfilling* of trenches from which lines are removed. Site cleanup activities began in 1988 and are scheduled for completion in 1990.

Groundwater: The remedies selected involve three distinct areas of contamination: (1) Yellow Water Reservoir: *capping* contaminated areas and extracting and treating the groundwater; (2) Red Water Reservoir: relocating ponds 1 and 2, filling and capping original ponds 1 and 2, and extracting and treating the groundwater; and (3) Pond 13: capping contaminated areas and extracting and treating the groundwater. Site cleanup activities are scheduled to begin in 1990.

Site Facts: In 1984, the EPA concurred with the Army's request to assume responsibility for response actions at the site. West Virginia Ordnance is participating in the *Installation Restoration Program* (IRP), a specially funded Department of Defense (DOD) program designed to investigate, identify, and control hazardous waste on military or other DOD installations.

Environmental Progress



While the West Virginia Ordnance site is awaiting the completion of cleanup activities begun in 1988, the EPA and the Army have evaluated site threats and have determined that the site does not currently pose an immediate risk to health or the environment.

GLOSSARY:

TERMS USED IN THE FACT SHEETS

This glossary defines the italicized terms used in the site fact sheets for the State of West Virginia. The terms and abbreviations contained in this glossary are often defined in the context of hazardous waste management as described in the site fact sheets, and apply specifically to work performed under the Superfund program. Therefore, these terms may have other meanings when used in a different context.

Administrative Order On Consent: A legal and enforceable agreement between EPA and the parties potentially responsible for site contamination. Under the terms of the Order, the potentially responsible parties agree to perform or pay for site studies or cleanups. It also describes the oversight rules, responsibilities and enforcement options that the government may exercise in the event of non-compliance by potentially responsible parties. This Order is signed by PRPs and the government; it does not require approval by a judge.

Alluvial: An area of sand, clay, or other similar material that has been gradually deposited by moving water, such as along a river bed or the shore of a lake.

Aquifer: An underground layer of rock, sand, or gravel capable of storing water within cracks and pore spaces, or between grains. When water contained within an aquifer is of sufficient quantity and quality, it can be tapped and used for drinking or other purposes. The water contained in the aquifer is called groundwater.

Backfill: To refill an excavated area with removed earth; or the material itself that is used to refill an excavated area.

Bioremediation: A cleanup process using naturally occurring or specially cultivated microorganisms to digest contaminants naturally and break them down into nonhazardous components.

Cap: A layer of material, such as clay or a synthetic material, used to prevent rainwater from penetrating and spreading contaminated materials. The surface of the cap is generally mounded or sloped so water will drain off.

Consent Decree: A legal document, approved and issued by a judge, formalizing an agreement between EPA and the parties potentially responsible for site contamination. The decree describes cleanup actions that the potentially responsible parties are required to perform and/or the costs incurred by the government that the parties will

reimburse, as well as the roles, responsibilities, and enforcement options that the government may exercise in the event of non-compliance by potentially responsible parties. If a settlement between EPA and a potentially responsible party includes cleanup actions, it must be in the form of a consent decree. A consent decree is subject to a public comment period.

Decommission: To revoke a license to operate and take out of service.

Impoundment: A body of water or sludge confined by a dam, dike, floodgate, or other barrier.

Installation Restoration Program: The specially funded program established in 1978 under which the Department of Defense has been identifying and evaluating its hazardous waste sites and controlling the migration of hazardous contaminants from those sites.

Intake: The source where a water supply is drawn from, such as from a river or waterbed.

Lagoon: A shallow pond where sunlight, bacterial action, and oxygen work to purify wastewater. Lagoons are typically used for the storage of wastewaters, sludges, liquid wastes, or spent nuclear fuel.

Landfarm: To apply waste to land and/or incorporate waste into the surface soil, such as fertilizer or soil conditioner. This practice is commonly used for disposal of composted wastes.

Landfill: A disposal facility where waste is placed in or on land.

Long-term Remedial Phase: Distinct, often incremental, steps that are taken to solve site pollution problems. Depending on the complexity, site cleanup activities can be separated into a number of these phases.

Nitroaromatics: Common component of explosive materials, which will explode if activated by very high temperatures or pressures; 2,4,6-Trinitrotoluene (TNT) is a nitroaromatic.

Phenols: Organic compounds that are used in plastics manufacturing and are by-products of petroleum refining, tanning, textile, dye, and resin manufacturing. Phenols are highly poisonous and can make water taste and smell bad.

Polycyclic Aromatic Hydrocarbons or Polyaromatic Hydrocarbons (PAHs): PAHs, such as pyrene, are a group of highly reactive organic compounds found in motor oil. They are a common component of creosotes and can cause cancer.

Polychlorinated Biphenyls (PCBs): A group of toxic chemicals used for a variety of purposes including electrical applications, carbonless copy paper, adhesives, hydraulic fluids, microscope emersion oils, and caulking compounds. PCBs are also produced in certain combustion processes. PCBs are extremely persistent in the environment because they are very stable, non-reactive, and highly heat resistant. Burning them produces even more toxins. Chronic exposure to PCBs is believed to cause liver damage. It is also known to bioaccumulate in fatty tissues. PCB use and sale was banned in 1979 with the passage of the Toxic Substances Control Act.

Potentially Responsible Parties (PRPs): Parties, including owners, who may have contributed to the contamination at a Superfund site and may be liable for costs of response actions. Parties are considered PRPs until they admit liability or a court makes a determination of liability. This means that PRPs may sign a consent decree or administrative order on consent [see Administrative Order on Consent] to participate in site cleanup activity without admitting liability.

Runoff: The discharge of water over land into surface water. It can carry pollutants from the air and land into receiving waters.

Sediment: The layer of soil, sand and minerals at the bottom of surface waters, such as streams, lakes, and rivers that absorb contaminants.

Seeps: Specific points where releases of liquid (usually leachate) form from waste disposal areas, particularly along the lower edges of landfills.

Seepage Pits: A hole, shaft, or cavity in the ground used for storage of liquids, usually in the form of leachate, from waste disposal areas. The liquid gradually leaves the pit by moving through the surrounding soil.

Stabilization: The process of changing an active substance into inert, harmless material, or physical activities at a site that act to limit the further spread of contamination without actual reduction of toxicity.

Volatile Organic Compounds (VOCs): VOCs are made as secondary petrochemicals. They include light alcohols, acetone, trichloroethylene, perchloroethylene, dichloroethylene, benzene, vinyl chloride, toluene, and methylene chloride. These potentially toxic chemicals are used as solvents, degreasers, paints, thinners, and fuels. Because of their volatile nature, they readily evaporate into the air, increasing the potential exposure to humans. Due to their low water solubility, environmental persistence, and widespread industrial use, they are commonly found in soil and groundwater.

Watershed: The land area that drains into a stream or other water body.